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# TECHNICAL MEMORANDUM

(TM Series)

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New 1604 Computer Programs	SYSTEM
Milestone 5 (Supplement)	DEVELOPMENT
Input Tracking Data (STAPIN)	CORPORATION
by	2500 COLORADO AVE.
Nancy J. Speer	SANTA MONICA
14 March 1963	CALIFORNIA
Approved	
B. G. Ciaccia	

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TM-(L)-793/003/00A

Modified Pages

24  
25  
26  
27  
28

Notes and Filing Instructions

Insert new pages dated 14 March 1963

14 March 1963

24

TM-(L)-793/003/00A

#### PREFACE

In compliance with the directive received by SDC as Letter No. A63-1959.10-139 dated 20 February 1963 from Aerospace Corporation, another option will be added to the Mod AD version of the subroutine, Input Tracking Data (STAPIN). This document describes the new option and is produced as a supplement to the existing Milestone 5 for STAPIN, TM-(L)-793/003/00.

## 1.0 INTRODUCTION

The subroutine, Input Tracking Data (STAPIN), as described in TM-(L)-793/003/00, is being revised to include a general input capability in addition to the selective input capability originally designed. In brief, the selective input capability requires the user program to specify the data to be input by providing station number, revolution number, and antenna identification. STAPIN then requests the data by station, revolution and vehicle number from either the Operator or SRDTRK, depending on whether data transmission is via paper tape or the Bird Buffer Transfer Tape. If transfer tape is used, SRDTRK searches for the specified data. When the data are found, SRDTRK sets the interlock on the interrupt capability until STAPIN indicates that it is through with the input process; at which time the interlock is removed and the Transfer tape is positioned at its logical end.

With the general input capability, which will be incorporated in the Mod AD version of STAPIN, the user program need not specify station, revolution, and antenna. STAPIN will either input data for the appropriate vehicle from the source (magnetic tape or paper tape) indicated by the Operator or, if possible, from the source implied by the user program (see Section 3.1). When using this option in conjunction with reading the Transfer tape, STAPIN will not allow SRDTRK to remove the interrupt interlock until the logical end of tape is reached or until the user program tells STAPIN to verminate the interlock, whichever occurs first. The use and hazards of this additional capability are described in the following paragraphs.

## 2.0 USAGE

### 2.1 Calling Sequence

The calling sequence will remain the same as described in paragraph 3.1.1 of TM-(L)-793/003/00. However, the lower half of the first word ( $\alpha$  containing antenna type, doppler indicator, and station)

can be set to zero; if it is, the specified revolution number will be disregarded. Also, the sign of the second word ( $\alpha + 1$  containing maximum number of points and revolution) will indicate whether STAPIN should allow the interrupt interlock to be removed. A positive value means remove the interlock when finished; a negative means do not remove the interlock. Note that when the sign is negative the value will be assumed to be in complement form. This indicator has no meaning when paper tape is being processed.

## 2.2 Identifications Given Upon Return

STAPIN will set the station number in cell ST in the RIPOOL. The antenna identification will be set in the Q-register upon return. When the Operator indicates there is no more data to be processed, STAPIN will execute an error return with the Q-register set at minus zero.

## 2.3 On-Line Messages

Initially, STAPIN will request data from the Operator with the typewriter message:

```
"REQUEST DATA
  IF TRANSFER TAPE, SET A NQ 0, HIT START
  IF PRESTORED TAPE, SET Q NQ 0, HIT START
  IF PAPER TAPE, HIT START
  IF NONE, SET A AND Q NQ 0, HIT START"
```

Subsequent requests are made with the first line only: "REQUEST DATA". After the Operator provides the input (if necessary), he will inform STAPIN of the source by setting the A and Q registers as prescribed in the message.

Once input from the Transfer tape is initiated, no message will appear until the Transfer tape is entirely processed. Further requests for data take the form of: "REQUEST PAPER TAPE". The Operator will load the paper tape into the paper tape reader and hit start; or load the prestored magnetic tape onto tape unit 7, set the Q-register to not zero and hit start. The Operator will indicate when there is no more data to be input by setting both the A and Q registers to not zero.

If a header error is detected when reading paper tape under the general input option, the following message will appear on the typewriter:

"NO HEADER

TO REREAD, SET ACC NQ O, HIT START

TO CONTINUE, TYPE MONTH, DAY, AMPM AS MM/DD A (OR P)

STATION NUMBER, THEN FORMAT- -0 = MOD2, 1 = DOPPLER,

2 = ANGLES"

The Operator will decide whether to reread or continue and will act accordingly. The month, day, AM/PM indicator, station, and format will be input via the typewriter as two digits (01-12) for month followed by any symbol or space, two digits (01-31) for day, a space, an "a" for AM or "p" for PM, a space, the decimal station number, a space, and the correct digit for the paper tape format. If the paper tape is from a semi-augmented station (IOS), the format need not be input. This message will not be typed if the paper tape is prestored.

If the logical end of tape is encountered when reading prestored paper tape, the message "NO MORE DATA ON PRESTORED TAPE" will be typed. The Operator will respond to this message in the same way he responds to the "REQUEST DATA" message. However, if he wants to read prestored tape he must manually rewind the tape or replace it with another prestored tape.

### 3.0 INPUT METHOD

#### 3.1 Bird Buffer Transfer Tape

Because of the interrupt capability, the Transfer tape is assumed to be positioned at its logical end. Consequently when using the general input option and allowing the Operator to initiate input of the Transfer tape, the Transfer tape will be rewound and the first file of tracking data for the appropriate vehicle will be input. The only problem with this method is that the user program may have already fit



to these data. The problem can be avoided if the user program initiates Transfer tape input by calling STAPIN with the selective input option giving the antenna, station, and revolution associated with a specific file on the tape, and indicating that the interrupt interlock should be retained. STAPIN will then find and process the specified data. Subsequent calls to STAPIN with the general input option will cause STAPIN to process subsequent files on the tape (one file per call) until the logical end of tape is reached or until the user program tells STAPIN to remove the interlock.

If two antennas are reporting from one station, STAPIN will prefer the data from an antenna giving angles and range to the data from an antenna giving angles only.

### 3.2 Paper Tape

Other than the change in external communication with the Operator via the on-line typewriter, the input of data from unaugmented stations will be the same as stated in TM-(L)-793/003/00. However, when reading the prestored magnetic tape, STAPIN will start from wherever the tape is positioned and search for the beginning of the next file of tracking data. When the logical end of tape is reached the tape will not be rewound automatically. The Operator will be notified that there is no more data on the prestored tape. He may then choose to rewind the tape manually.

For paper tape from semi-augmented stations, the choice between data from two antennas will be based on data type; angles and range will be chosen in preference to angles only.

### 4.0 RESTRICTIONS

If the user program decides to discontinue its operation, it must notify STAPIN by setting the second cell ( $\alpha + 1$ ) in the calling sequence to a positive value so STAPIN can remove, if necessary, the interrupt interlock placed on the Transfer tape.

14 March 1963

TM-(L)-793/003/00A

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TM-(L)-793/003/00A

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